

FEASIBILITY STUDY

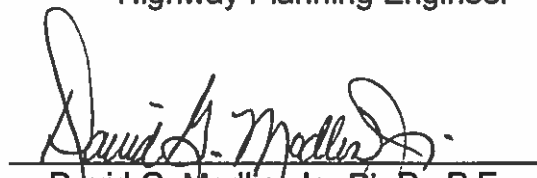
**NC 16
from the US 221 Bus./NC 88 intersection in Jefferson
to the Virginia State Line
Ashe County**

Division 11

FS-9911B

Prepared by the
Program Development Branch
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I. General Description

This preliminary study describes recommended improvements to NC 16 in Ashe County. It is recommended that NC 16 be widened from the US 221 Bus./NC 88 intersection in Jefferson to the Virginia state line, a distance of approximately 13.4 miles (21.6 km). For a location map, please see Figure 1.

From the US 221 Bus./NC 88 intersection in Jefferson to the US 221/NC 16 intersection north of Jefferson, it is recommended that the roadway be widened to a 5-lane, 64-foot (19.5-m) wide (face-to-face), curb-and-gutter section with 10-foot (3.0-m) wide berms.

From the US 221/NC 16 intersection north of Jefferson to the Virginia state line, it is recommended that the roadway be widened to a 2-lane rural shoulder section with 12-foot (3.6-m) wide travel lanes with 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders.

The proposed widening should be accomplished on the existing 100-foot (30.5-m) wide right-of-way.

The total cost for right-of-way (utility relocations) and construction is estimated to be \$30,400,000 as follows:

Right-of-Way	\$ 700,000
Construction	29,700,000
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Total Cost	\$30,400,000

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to describe the problem, recommend a treatment including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

II. Need For Project

The purpose of this project is to improve the traffic carrying capacity and accident experience of NC 16 between Jefferson and the Virginia state line.

NC 16 is designated as a major rural collector on the North Carolina Statewide Functional Classification System and the section within the Jefferson Town limits is designated as a major thoroughfare on the Jefferson-West Jefferson Thoroughfare Plan.

From the US 221 Bus./NC 88 intersection in Jefferson to the US 221/NC 16 intersection north of Jefferson, the roadway is moderately developed with residences and businesses. The Ashe County High School is located on the west side of the roadway immediately south of the US 221/NC 16 intersection.

From the US 221/NC 16 intersection to the Virginia state line, the project route is generally characterized by woodlands and mountainous terrain and there are a few residences scattered along the roadway.

Existing NC 16 is generally a 2-lane roadway with 22-foot (6.7-m) wide pavement and 6-foot (1.8-m) to 8-foot (2.4-m) wide soil shoulders. The roadway includes very little area to pass safely and is typified by mountainous terrain and numerous curves. Immediately north of the project, on the Virginia side of the state line, the roadway has 12-foot (3.6-m) wide travel lanes, and 2-foot (0.6-m) wide paved shoulders.

At the south project terminal, the US 221 Bus./NC 16/NC 88 intersection is a "T" intersection which is stop sign controlled for left turns and yield sign controlled for right turns on the south bound approach. The southbound approach includes 1 right-turn lane, 1 left-turn lane, and 1 lane receiving northbound traffic. The turning movements are channelized by a raised median. The westbound approach (NC 16-88) is a 2-lane roadway at the intersection. The eastbound approach (US 221 Bus.-NC 88) is a 4-lane curb-and-gutter section providing 1 thru-lane, 1 left turn lane, 1 lane receiving westbound traffic from the NC 16-88 approach and 1 lane receiving right-turn traffic from the southbound approach.

There are three structures located along the project route which are described as follows:

1. Bridge #30 carries NC 16 over SR 1573. It has a clear deck width of 28 feet (8.5 m) and a length of 135 feet (41.2 m). It was constructed in 1956 and has a sufficiency rating of 86.3 points (out of a possible 100.0 points).
2. Bridge #36 carries NC 16 over SR 1539 and the North Fork New River. It has a clear deck width of 28 feet (8.5 m) and a length of 200 feet (61.0 m). It was constructed in 1956 and has a sufficiency rating of 68.6
3. Bridge #42 carries NC 16 over SR 1536 and Helton's Creek. It has a clear deck width of 28 feet (8.5 m) and a length of 135 feet (41.2 m). It was constructed in 1956 and has a sufficiency rating of 79.9.

The estimated 1997 Average Daily Traffic (ADT), on NC 16, within the project termini, ranges from a high of approximately 6,300 vehicles per day (vpd) near Jefferson to a low of approximately 1,400 vpd at the Virginia state line. The design year (2025) estimates are approximately 9,500 vpd and 2,600 vpd, respectively. Current and future truck volumes are estimated to total about 6% of the traffic volumes.

The current Level of Service (LOS), on NC 16 is estimated to range from level E near Jefferson to Level C near the Virginia state line. With the recommended improvements, it is anticipated that the LOS near Jefferson will improve to Level A and Level C will prevail for the remainder of the roadway through the design year.

During the period from April 1, 1995, through March 31, 1998, there were 85 accidents reported within the project termini. This resulted in an accident rate of 319.4 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 246.5 Acc/100 MVM for all highways in North Carolina during the period from 1995 through 1997. There was one fatality reported during the period and 19 of the accidents resulted in non-fatal injuries. The most prevalent accident type involved hitting animals (34.1%) and 27% of the accidents were ran-off-road accidents.

III. Detailed Description

It is recommended that NC 16 be widened from the US 221 Bus./NC 88 intersection in Jefferson to the Virginia state line, a distance of approximately 13.4 miles (21.6 km). For a location map, please see Figure 1.

From the US 221 Bus./NC 88 intersection in Jefferson to the US 221/NC 16 intersection north of Jefferson, it is recommended that the roadway be widened to a 5-lane, 64-foot (19.5-m) wide (face-to-face), curb-and-gutter section with 10-foot (3.0-m) wide berms.

From the US 221/NC 16 intersection to the Virginia state line, it is recommended that the roadway be widened to a 2-lane rural shoulder section with 12-foot (3.6-m) wide travel lanes with 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders.

At the US 221 Bus./NC 88 intersection, the southbound approach (NC 16) should include a right-turn lane, a left-turn lane, and 2 northbound lanes to receive traffic from US 221 Bus./NC 88 and from NC 16-88. The center turn lane should end as a painted island at the intersection to channelize traffic. A new traffic signal should be installed at the intersection.

At the US 221 intersection, north of Jefferson, the northbound approach (NC 16) should include a right-turn lane, a thru lane, a left-turn lane into the high school, and two southbound lanes. A new traffic signal should be installed at the intersection.

Three existing bridges should be replaced with new bridges having a clear deck width of 30 feet (9.1 m). The bridges to be replaced are bridge # 30 over SR 1573, bridge # 36 over SR 1539 and North Fork New River, and bridge # 42 over SR 1536 and Helton's Creek.

Existing guardrail should be relocated and/or replaced as necessary and additional guardrail should be installed as warranted.

The proposed widening should be accomplished on the existing 100-foot (30.5-m) wide right-of-way.

The total cost for right-of-way (utility relocations) and construction is estimated to be \$30,400,000 as follows:

Right-of-Way	\$ 700,000
Construction	29,700,000
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Total Cost	\$30,400,000

IV. Other Comments

An environmental screening was not conducted for this study; however, due to the construction potential in the areas of North Fork New River and Helton's Creek, Corps of Engineers permits and wetlands mitigation will be required. The costs for wetlands mitigation is not included as part of the above estimated project costs.

No provisions for bicycles have been included in this report.

A transportation benefit analysis was completed for this project. It is estimated that the 27 year (1998-2025) transportation benefits are \$6.2 million which is an average of more than a quarter of a million dollars per year. The total benefits include accident cost savings, time cost savings, and operating cost savings.